Remarks

Claim 1-9 are pending.

Claims 1-9 stand rejected.

Claims 1-2, 5-6 and 9 have been cancelled.

Claims 3, 4, 7 and 8 have been amended.

Claims 3, 4, 7 and 8 are submitted herein for review.

No new matter has been added.

In paragraph 1 of the Office Action, the Examiner has objected to claims 3-5 and 7-9 for containing a minor informality. Claims 5 and 9 have been cancelled and claims 3-4 and 7-8 have been amended accordingly.

In paragraph 3 of the Office Action, the Examiner has rejected claim 1 under the judicially created doctrine of obviousness type double patenting. Applicants have cancelled claim 1 and respectfully request that this rejection be withdrawn.

In paragraph 5 of the Office Action, the Examiner has rejected claims 1-9 under 35 U.S.C. § 102(b) as being anticipated by Verpooten (U.S. Patent No. 6,055,226). Applicants respectfully disagree with the Examiner's contention and submit the following remarks in response.

The present invention as claimed in independent claims 3 and 7 are directed to a multiplex transmission apparatus that is connected to at least one high speed transmission line (second transmission line in claim 3 and the first transmission line in claim 7) and a plurality of

low speed transmission lines (first transmission lines in claim 3 and the second transmission lines in claim 7), where signals are transferred in a frame foram according to the SONET or SDH standard. As described in the specification low speed transmission lines are OC-12 paths and the high speed transmission line is an OC-192 path (according to the SONET standards).

As described in the background of the present invention, in a bi-directional line switched ring, or BLSR, having a pair of ring-wise OC-12 transmission paths in accordance with SONET or SDH standards, an automatic protection switching (APS signal), using the K1 and K2 byte defined in a transport overhead of a synchronous multiplex signal, is used for the purpose of protection switching operations.

However, a drawback with such a system is that, in a network configuration in which a part of a ring-wise OC-12 path is replaced with a high speed OC-192 path, APS bytes, transferred on the OC-12 path are terminated by an OC-192 type multiplex unit which is connected to an one end of the OC-192 path so that OC-12 type multiplex units located in the other side of the OC -192 path cannot receive the APS signal. In such a case, it is not possible to carry out protectin switching among the OC-12 type multiplex units even if one of the multiplex units detects a failure on the OC-12 path and generates the APS signal.

The present invention is directed to overcoming this drawback. According to independent claim 3, the APS signal received from the low speed (OC-12) path to a high speed (OC-192) path is done in the form of an alarm. The alarm is a bit pattern with at least three low order bits all having a "1" value. The bit pattern is inserted into a predetermined location of an overhead that is to be transferred on the high speed path together with a payload in either of the SONET or SDH standards. The predetermined location resides in an undefined area having no authorized definition with respect to the information contained therein, and is in a line overhead

in the case of SONET and within an M section in the case of SDH.

According to the second independent claim 7 an alarm or bit pattern as described above, received from a high speed path, is transmitted to a plurality of low speed paths.

One the other hand, the cited prior art, namely Verpooten, teaches failure signal method for use in a mixed PDH/SDH network, where PDH (Plesiochronous Digital Hierarchy) refers to a local standard, different for each country, before the SDH standard was authorized. Verpooten proposes a PDH node that can transmit an alarm data stream (ADS), which is an all-ones data stream or an all-zeros data stream, to an SDH node in the event of detecting an internal failure, loss of signal, or receiving an ADS from the upstream side.

Although Verpooten teaches in Fig. 2 that spare bits "sp1" and "sp2" are included in an overhead segment (OH), the "sp1" bit is used to indicate an internal failure and the "sp2" bit is used to indicate an external failure as described in column 4. As noted in column 7 (Figure 3), Verpooten teaches the activation of the "sp1" bit or the "sp2" bit in the overhead segment associated with the low order data segment (LODS) received from the upstream side, depending on the kind of failure as stated above.

The overhead with the "sp1" bit and "sp2" bit is forwarded internally to a substitution means 9 which transmits high order data streams including low order data segments (LODSs) when both the "sp1" and "sp2" bit are not activated, but substitutes the LODS with an alarm data stream (ADS) when "sp1" bit or "sp2" bit is activated.

In other words, both the "sp1" and "sp2" bit are used internally in the PDH node so that the substitution means 9 can substitute the LODS with the alarm data stream (ADS) when a failure is detected.

The Verpooten reference does not teach or suggest all of the elements of the present invention as claimed. For example, there is no teaching or suggestion in Verpooten that discloses a bit pattern with at least three low order bits all having a "1" value nor does it disclose that the predetermined location for the bit pattern is a location that resides in an undefined area having no authorized definition with respect to the information contained therein, and is in a line overhead in the case of SONET and within an M section in the case of SDH

As such, Applicants respectfully request that the rejection of claims 3-4 and 7-8 under 35 U.S.C. § 102(b) be withdrawn.

In view of the foregoing Applicants respectfully submit that pending claims 3-4 and 7-8 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application they are invited to contact the undersigned at the number listed below.

Respectfully submitted,

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